

SSIM-A2-01/SSIM-A8-01
ATM 155
SmartStack Interface Modules

Installation
and
User Guide

CABLETRON
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EN 50082-1
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Equipment Type/Environment: **Networking Equipment, for use in a Commercial**
or Light Industrial Environment.

We the undersigned, hereby declare, under our sole responsibility, that the equipment packaged with this notice conforms to the above directives.

| | |
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Summary of Contents

Following is a short description of the content of the chapters and appendixes in this publication:

Chapter 1, “Introduction”, is a general introduction to the SSIM-A2-01 ATM 155 Uplink UTP5 module and the SSIM-A8-01 ATM 155 Uplink MMF module.

Chapter 2, “Installation”, lists the SSIM-Ax-01 module package contents, explains module installation and cabling, describes the front panel LEDs, and explains configuration and testing of the module.

Chapter 3, “Console Configuration”, deals with setting up and configuring the SSIM-Ax-01 module using a direct console connection.

Chapter 4, “Statistics”, lists and explains the statistics that are available for the SSIM-Ax-01 module.

Chapter 5, “Getting in Touch with Technical Support”, lists Cabletron Systems’s support services such as hotline support, fax support and the support web, as well as other services such as the bulletin board service, FTP server and e-mail.

Appendix A, “Abbreviations” contains a list of the abbreviations used in this publication.

Appendix B, “Log Messages” lists possible error messages for the SSIM-Ax-01 module.



1. Introduction

The SmartStack SSIM-A2-01 and SmartStack SSIM-A8-01 ATM 155 Uplink Modules from Cabletron Systems provide high-speed connections to the ATM backbone for the STS16-20RM Token-Ring Switch. Designed for high performance and low latency, these modules provide connectivity between existing legacy Token Ring networks and ATM networks.

***Note:** References to STS16-20RM are also applicable to STS16-20FRM.*

The SSIM-Ax-01 module mounts in one of the two front-panel expansion module slots on the switch. The SmartStack SSIM-A2-01 has a UTP-5 copper shielded RJ-45 connector interface. The SmartStack SSIM-A8-01 is available for multimode optical fiber with duplex SC connector.

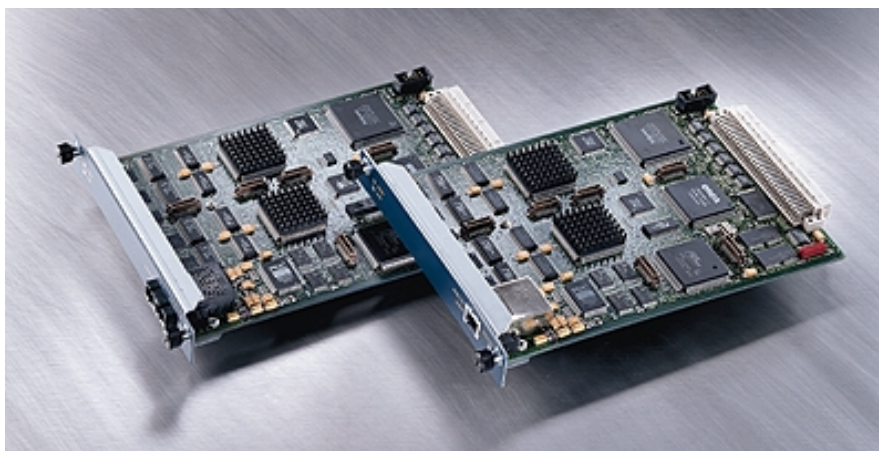


Figure 1. SSIM-A2-01 Uplink (right) and SSIM-A8-01 Uplink (left)

The modules support Token Ring LAN Emulation (LANE) 1.0, UNI 3.0/3.1/4.0 and Integrated Local Management Interface (ILMI) 4.0.

A single ATM interface can emulate up to 63 Virtual ATM Ports (VAPs), each implementing a separate LANE bridge (LANE proxy client). Virtual ATM ports support nearly all of the features of standard Token Ring ports, and are configured just like any other Token Ring port. Extra configuration options are available for configuring the LAN emulation and ATM interface options.

The bandwidth of the ATM interface is shared among multiple VAPs. Additionally, advanced traffic configuration facilities eliminate transmit overloads and permit the optimization of bandwidth usage.



2. Installation

This chapter contains instructions for installing, connecting and testing the SSIM-Ax-01 module.

This chapter contains the following information:

- Package Contents
- Rules to Remember
- Installation Procedure
- Hardware Installation
- Software Installation
- Cabling
- LEDs
- Testing the Module
- Configuration

Package Contents

Your SSIM-Ax-01 package contains the following items:

- One SSIM-A2-01 ATM 155 Uplink UTP5 *or*
One SSIM-A8-01 ATM 155 Uplink MMF
- One CD-ROM containing the Token Ring switch programs and the Switch Manager for Windows and HP OpenView for Windows as well as user documentation in pdf format.
- One *SSIM-A2-01/SSIM -A8-01 ATM 155 Uplink—Installation and User Guide* (this document)

Rules to Remember

This section will help you understand the configuration restrictions for the SSIM-Ax-01 ATM 155 Uplink Module. In brief, you must remember the following rules when planning to install the uplink:

- Only one VAP per uplink per VLAN
- If you create parallel paths directly between switches, spanning tree must be enabled
- Configuration data follows the switch slot, not the uplink module

Frame Length Limit

When attaching to an ATM network with LANE, possible ATM frame sizes are 1516, 4544, 9234 and 18190 bytes.

The LANE frame size (*ATM Forum: C3*) is defined as including the two byte ATM LANE overhead, but without the 4 bytes Token Ring CRC. This gives the following relationship to the size of frames any “real” Token Ring station should be using.

| TR-LANE Max Data Frame Size | Token-Ring Max Frame Size |
|--------------------------------|------------------------------|
| 1516 | 1514 |
| 4544 | 4542 |

Table 1. Maximum Frame Sizes

You must configure your Token Ring stations to a maximum frame size as above, or to a lower value. Some protocols will negotiate frame sizes end-to-end, some will only recognize frame size settings between end-stations, and yet others will only use the frame size of the transmitting interface. If you configure the frame size of all Token-Ring stations, all protocols will work.

One VAP per Uplink per VLAN

The SSIM-Ax-01 module does not allow configurations in which the following frame operations take place within a single uplink module:

- Bridging from ATM back to ATM.
- Broadcasting a frame from Token Ring to more than one ATM ELAN.

These operations would occur if the uplink module provided more than one VAP per VLAN. Therefore, the configuration shown in Figure 2 is **not** supported.

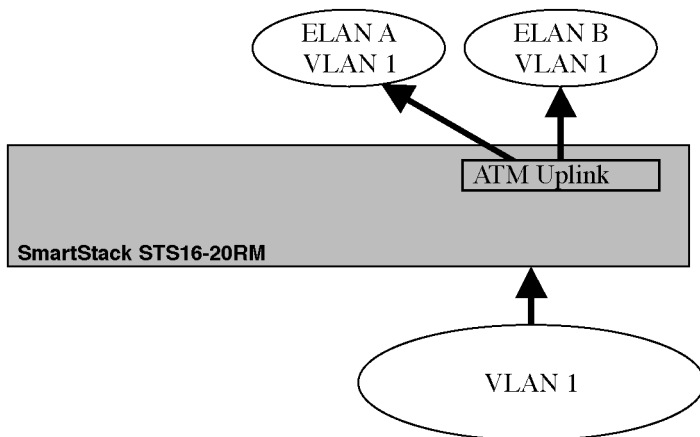


Figure 2. Unsupported Configuration

If you want to connect the same STS16-20RM Token Ring Switch to ATM via more than one VAP, the VAPs must reside on different ATM uplink modules, as shown in Figure 3.

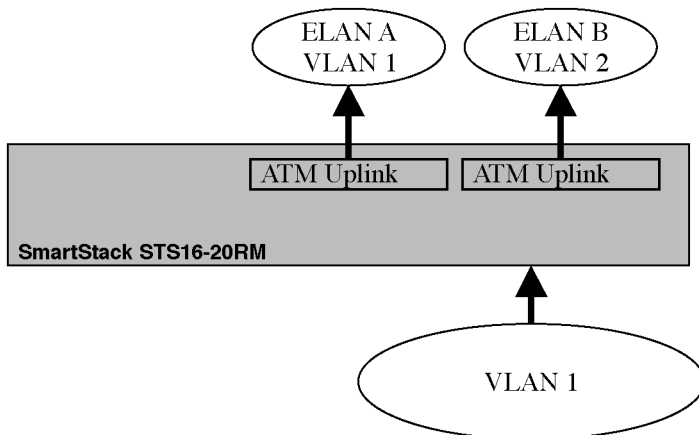


Figure 3. Connecting One Switch to Two VAPs

If you connect to the same ATM ELAN more than once from the same VLAN, you are using parallel bridges. When doing so, you must always enable the Spanning Tree function for all the CRFs that have parallel paths.

With more than one uplink, you can connect more VLANs to ATM while at that same time creating backup connections. Figure 4 shows two uplink modules, each connected to two ATM ELANs. The lighter arrow shows the parallel path in the spanning tree “blocked” state (the path is on “standby”).

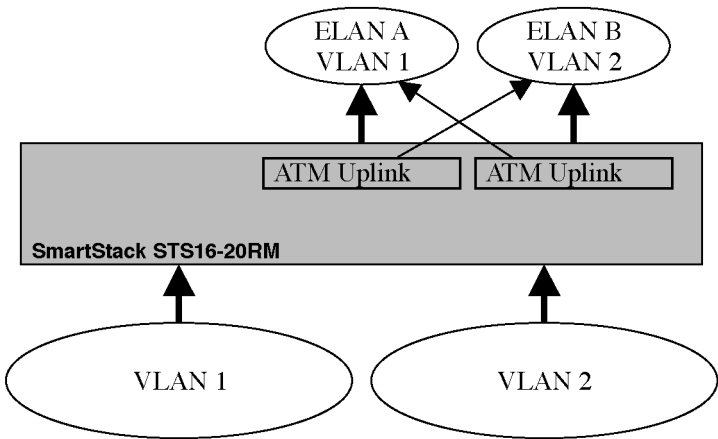


Figure 4. Connecting VLANs to ATM

Spanning Tree

If you create parallel paths in your network topology, but fail to enable the spanning tree protocol, you risk “broadcast storms” that can disrupt your entire network. To enable spanning tree, see section “Spanning Tree Menu” in the STS16-20RM switch manual. The default setting for spanning tree is disabled.

Configuration Data

When you configure an uplink module in a switch, the configuration data is applied to any uplink in that particular switch slot. This means that the configuration data does not move with the uplink module if the module is moved to another slot or another switch. Conversely, configuration data is retained if one uplink is replaced with another.

Note, however, that the SSIM-Ax-01 module software image is stored in the module itself and will follow the module when it is moved to another switch.

Installation Procedure

The SSIM-Ax-01 module is packaged with software for both the module and the base STS16-20RM Token Ring Switch. The switch is also packaged with software for both the module and the switch. To ensure compatibility between the module and the switch, you must install the later of the two software revisions. The switch and module software is also available via Cabletron's online services, such as the Internet.

When installing the module, follow the procedure listed below:

1. Install the software in the switch. See the switch manual for instructions on downloading software.
2. Optional: clear NVRAM in the base switch. This will erase all configuration in the switch.
3. Reset the switch to activate the new software.
4. If you cleared NVRAM in step 2, re-establish the switch configuration. Verify that the switch is operating correctly.
5. Turn off the switch.
6. Physically install the module in one of the two expansion slots. See section "Hardware Installation" on page 8.
7. Turn on the switch.
8. Download the software for the module. See section "Software Installation" on page 9.
9. If you plan to use the graphical switch manager, install it now.
10. If necessary, configure the module. For details, see section "Configuration" on page 14 as well as Chapter 3, "Console Configuration".

Hardware Installation

Use the following steps to install the SSIM-Ax-01 module in a STS16-20RM Token Ring Switch:

1. Power off the base switch by unplugging the power cord from the power outlet. If the switch uses the optional SmartStack STS-PSU Redundant Power Supply Unit, unplug the connector from the base switch as well.
2. Select an empty expansion module slot in which to install the module. You can install the module in either or both of the slots.
3. Remove the blind plate covering the expansion module slot on the front of the STS16-20RM by loosening the two retaining thumbscrews (Figure 5). Keep the plate for use in the event that the expansion module is removed.



Figure 5. Removing the Expansion Slot Cover

➔ **Warning:** Expansion modules are **not** hot-swappable. If you install or remove expansion modules while the power to the switch is on, damage may occur to the switch and to the module.

4. Carefully insert the module into the rails on each side of the expansion slot, sliding it back until the connector on the module is seated into the connector at the back of the slot (Figure 6). When the module is fully seated, the module faceplate will be flush with the front of the base switch.

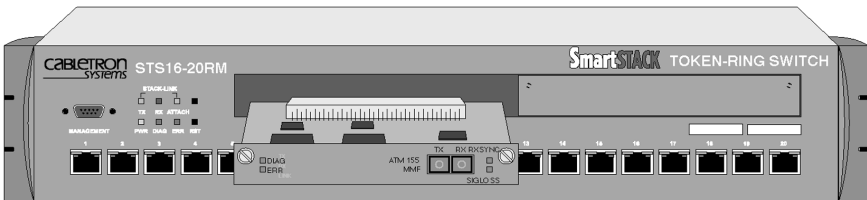


Figure 6. Installing the SSIM-Ax-01 Module

5. Secure the module with the two attached thumbscrews.
6. Reapply power to the switch.

Software Installation

Before you can use your SSIM-Ax-01 module, you must install the uplink module software. The module software can be downloaded via TFTP or via a serial line. Search the disks supplied with the module for a file named ATMyzv.bin. The letters yzv in the file name represent the version number of the software. For example, ATM400.bin is version 4.00 of the module software.

TFTP Download

1. Copy the software image to a suitable directory on the TFTP server.
2. From the Main menu in the console, select **Download → Upload**. The **Download → Upload** menu will be displayed.
3. Select **TFTP Download → Upload**. The **TFTP Download → Upload** menu will be displayed.

TFTP Download/Upload

| | |
|--|------------------------|
| TFTP Server Address | 194.255.112.166 |
| Download VLAN | trbrf-default |
| Main Image Download... | |
| ATM Firmware Download... | |
| Configuration Files Download... | |
| Configuration Files Upload... | |

Return

Return to previous menu

4. On this menu, set the IP address of the TFTP server. Also, set the download VLAN (the BRF on which the TFTP server is located).
5. Select **ATM Firmware Download**. The **ATM Firmware TFTP Download** screen is displayed.
6. Select **ATM Firmware Download Filename** and type the filename of the software image to download.
7. Select **Execute ATM Image Network Download** to start the download.

The console will display the download activity while the software is transferred over the network. When the software has been transferred, you will see the following messages:

```
Network download complete. Now transferring to ATM
Module(s), please wait...
Download of ATM firmware complete - ATM module(s) being
reinitialized...
```

The software is then burned into the module FLASH memory. The software remains in memory until replaced by a newer image. When the software installation is complete, the module is started for normal operation, and the following message is displayed:

```
Press <RETURN> to continue...
```

Serial Download

1. From the main menu, select **Download → Upload**. The **Download → Upload** menu is displayed.
2. Select **Serial Link Download**. The **Serial Link Download** screen is displayed.
3. Select **ATM Firmware Download**.
4. Using your terminal software, transfer the software image (ATMyzv.bin) to the module using the Xmodem protocol. The transfer will take some minutes, depending on your terminal settings and speed.

The software is then burned into the module FLASH memory. The software remains in memory until replaced by a newer image. When the software installation is complete, the module is started for normal operation, and the following message is displayed:

```
Press <RETURN> to continue...
```

Cabling

The cabling used depends on which version of the module you are installing.

SSIM-A2-01 ATM 155 Uplink UTP5

The SSM-A2-01 module uses standard copper UTP5 cabling. The maximum cable length is 100 m (328 feet).

1. Insert the modular jack from either end of an RJ45 UTP-5 cable into the connector on the SSM-A2-01 front panel.
2. Connect the other end of the cable to an ATM switch in the network.

SSIM-A8-01 ATM 155 Uplink MMF

The SSIM-A8-01 module uses multimode 62.5/125 micron fiber cabling. The maximum cable length is 2000 m (6560 feet).

1. Connect an SC-type optic fiber to the pair of SC-type connectors on the front panel of the module. To ensure proper connection, it may be necessary to clean the fiber connectors with a soft tissue dipped in alcohol.
2. Connect the other end of the cable to an ATM switch in the network using the following guidelines:
 - Connect the module RX connector to the ATM switch TX port.
 - Connect the module TX connector to the ATM switch RX port.



Note: If there is no connection between the ATM switch and the SSIM-A8-01 module (the RXSYNC LED is off), try swapping the TX and RX connectors at one end of the cable.

LEDs

There are four LEDs on the front panel of the SSIM-Ax-01 module. The LEDs show the module status and activity. Table 2 explains the status LEDs on the left of the module front panel, and Table 3 explains the ATM interface LEDs on the right of the module front panel.

| LED | Position | State | Meaning |
|--------------|----------|-------|---------------------------------|
| DIAG (green) | Top | On | Diagnostics are in progress |
| | | Off | No diagnostics are in process |
| ERR (yellow) | Bottom | On | A module failure has occurred |
| | | Off | The module is working correctly |

Table 2. Status LEDs and their Meanings

| LED | Position | State | Meaning |
|------------------|----------|-------|---|
| RXSYNC (green) | Top | On | The ATM interface is receiving a signal |
| | | Off | The ATM interface is not attached to a live transmitter |
| SIGLOSS (yellow) | Bottom | On | The ATM receive signal is below an acceptable level |
| | | Off | The ATM receive signal is acceptable |

Table 3. ATM Interface LEDs and their Meanings

Table 4 shows the LED status for the SSIM-Ax-01 module under normal operating conditions.

| LED | State |
|---------|------------|
| DIAG | Off |
| ERR | Off |
| RXSYNC | On (green) |
| SIGLOSS | Off |

Table 4. Normal LED State

Testing the Module

1. Power on the base switch to start diagnostics. Diagnostics are in progress when the STS16-20RM DIAG LED is on. After about a minute, the SSIM-Ax-01 DIAG LED will turn on, indicating that the expansion module diagnostics are in progress.
2. Verify that the base switch diagnostics have been completed successfully. You can see that diagnostics have been completed successfully when the switch DIAG LED turns off and the ERR LED stays off. Diagnostics can take up to four minutes to complete.
3. Verify that the SSIM-Ax-01 ERR LED is off. If the ERR LED is off, diagnostics have been successfully completed, and the module is ready for configuration.

Configuration

The SSIM-Ax-01 module can be configured using the RS-232-based console configuration, Telnet, or the SNMP-based management application. (The SNMP-based management application is described in the online help).

Default Configuration

When the module is inserted for the first time, the module will be configured with the default configuration, as described below:

- One VAP in the default CRF.
- LANE services using the LECS address configured in the switch, subsequently LECS at the LANE well-known address.
- The ELAN name will be empty.
- The maximum data frame size is 4544 (and the LAN type is Token Ring).
- The signaling version is UNI 3.1.
- The framing type is SONET.

You will need to reconfigure the module in the following cases:

- If you want to change any of the defaults listed above.
- If you want to change any of the more advanced parameters not listed above.
- If you want to connect other CRFs than the default CRF to ATM.



3. Console Configuration

This chapter explains how to view and edit the configuration of the SSIM-Ax-01 ATM 155 Uplink Module using a VT100 console attached directly to the STS16-20RM Token Ring Switch. The module configuration can also be modified from a remote VT100 console via a telnet session. Connecting a network management console is explained in the manual supplied with the switch.

The following topics are explained in this chapter:

- Introduction
- General Guidelines
- ATM Configuration - Port Menu
 - ATM Network Configuration
 - ATM Network Advanced Parameters
 - ATM LEC Main Configuration Screen
- Traffic Profiles
 - Traffic Profile Mapping Configuration
 - ATM LANE Parameters Configuration
 - ATM LEC PVC Configuration
 - ATM Traffic Profile Configuration

Introduction

In the console configuration, port numbers are used to refer to ports, with the ordinary Token Ring ports being numbered 1 to 20. Using the console, the ATM port will appear as port 21 when located in the left hand slot, and as port 25 when located in the right hand slot. The ATM ports can be configured just like the ordinary switch ports. They will appear as additional ports on any configuration panel where ports are listed.

As a significant difference from the ordinary Token Ring ports, the ATM ports can work as trunk ports, which means that they can carry traffic belonging to all possible 63 VLANs over the same physical cable connection. That is, each ATM port is divided into virtual ATM ports (VAPs). In the default configuration an ATM port will have one VAP in the default CRF. Assigning an ATM port to several CRFs will create new VAPs, but there can be only one VAP per BRF/VLAN.

After a VAP has been established as described above, you can configure the VAP from the Port Configuration menu. Manually added VAPs will have the same settings as the default VAP, except that the ELAN name will be set to the name of the CRF. Note that a BRF (VLAN) can only be connected to any ATM ELAN once on the same ATM module. This means that if more than one CRF is attached to ATM by the same ATM module, the CRFs must connect to different ELANs.

General Guidelines

To work within the console menus, follow these guidelines:

- To select a menu item, use the arrow keys to move the “highlight” over the selection, then press ENTER.
- If you need to specify additional information for any item—for example, selecting *Yes* or *No* or supplying a value—a prompt appears on the screen. If you want to exit the prompt without changing the value, press ESC.
- In most cases, new values are saved when you select **Return**.
- The term “More” means there is more information than currently displayed on that screen. Selecting **More** and pressing ENTER displays the next screen of information. If the screen is a one-screen display, selecting **More** will update the screen.
- The term “Port” refers to the number of a specific port on a switch.
- “Index” refers to the numerical order of a list.
- To return to the main menu from any screen within the menus, press CTRL-P. Note that any changes made to the screen you were in are not saved. To return to the greeting screen, press CTRL-B from any screen.

- To refresh the console panel at any time, press CTRL-L.
- If you are administering switches in a stack, many of the console screens will prompt for a box number. Enter the number of the box you want to administer to continue. The box that you are physically connected to is highlighted.
- The console automatically returns to the greeting screen after five minutes of inactivity. Five minutes is the default value. The time can be changed at the **Console Configuration** menu. The **Console Configuration** menu is within the **Configuration** menu, under the main menu.
- For protection against inadvertent or unauthorized access to configuration screens, you can set a password that users must enter at the greeting screen. If no password is configured, just press ENTER and the main menu is presented.

Navigating within the Menus

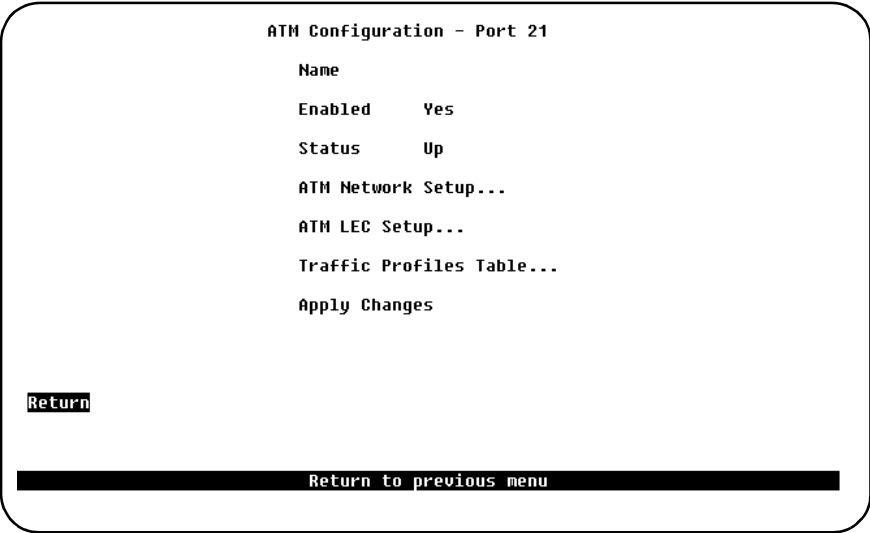
Use the arrow keys (also referred to as cursor keys) to move the highlight over a selection. If the selection is a menu, pressing the ENTER key displays a new screen of information; if the selection is a command, such as **Reset**, pressing the ENTER key initiates that function.

A heading with three “dots” after it means that when that heading is selected, a submenu or screen is displayed.

Unless specified differently, all screens or menus are accessed in the same way.

ATM Configuration - Port Menu

To change the configuration of the SSIM-Ax-01 ATM 155 Uplink Module, select **Port Configuration** from the **Configuration** menu and type the port number when prompted. The following menu is displayed.



The following items are available:

Enabled

Sets the administrative state of the port. Setting Enabled to Yes turns the module on. Setting Enabled to No turns the port off. Possible values are Yes and No.

Status

Shows the operative status of the port. Up is displayed when the port is running as configured by the user. Down indicates that the port is not running—either because Enabled was set to No or because an error has occurred. The information in this field cannot be edited. Possible values are Up and Down.

Apply Changes

Configuration parameters for the module port can be changed from a console session or remote telnet session. However, any changes to the port configuration will not take effect until the port is restarted. Selecting Apply Changes will restart the port using the new configuration information.

Note that traffic through the port will be disrupted while the port restarts.

ATM Network Configuration

To view and edit the ATM network configuration, select **ATM Network Setup** from the **ATM Configuration** - menu.

ATM Network Setup - Port 21

```

ATM Network Parameters
Master Timing:      Network          TC Framing Mode:   Sonet
Empty Cells:       Idle
Maximum Active ATM Virtual Channel Bits
UPI:UCI:           0:12
ILMI Parameters
UPI: 0             UCI: 16
Address Registration: Enabled
Common LANE Parameters
Max # of Active VCCs: 2048
LE-ARP Cache Size: 4096
Signalling Setup
UNI Version:       V3.1
SVC Support:       Enabled
Max Line Rate (cells/sec): 353200
Total # Simultaneous SVC calls in progress: 120

Return            Advanced Parameters...
  
```

Return to previous menu

The following information is displayed on this screen:

ATM Network Parameters

Master Timing

Sets the source of transmit timing. When connected to an ATM switch, the ATM switch will always be the master.

Possible values: *Local* and *Network* (default).

TC Framing Mode

Sets the Transmission Convergence (TC) layer framing mode.

Possible values: *SONET* (default) and *SDH*.

Empty Cells

Selects the empty cell generation mode.

Possible values: *Idle* (default) and *Unassigned*.

Maximum Active ATM Virtual Channel Bits

VPI:VCI

Selects the active Virtual Path Identifier (VPI) and Virtual Connection Identifier (VCI) bit combination.

Possible values: *0:12* (default), *1:11*, and *2:10*.

ILMI Parameters

VPI

The VPI value for the ILMI PVC.

Possible values: *0* to *3*.

Default: *0*.

VCI

The VCI value for the ILMI permanent virtual circuit (PVC).

Possible values: *0* to *4095*.

Default: *16*.

Address Registration

Enables ILMI address registration support.

Possible values: *Enabled* (default) and *Disabled*.

Common LANE Parameters

Max # of Active VCCs

Sets the maximum number of active VCCs.

Possible values: *32* to *2048*.

Default: *2048*.

LE-ARP Cache Size

Sets the maximum number of LE-ARP entries that can be cached.

Possible values: *256* to *4096*.

Default: *4096*.

Signalling Setup

UNI Version

Sets the UNI version.

Possible values: *3.0*, *3.1* (default) and *4.0*.

SVC Support

Enables switched virtual circuit (SVC) support for the ATM port. If you disable SVC support, you can only use PVC mode.

Possible values: *Enabled* (default) and *Disabled*.

Max Line Rate (cells/sec)

Sets the maximum peak rate of the physical link between the module and the ATM switch. The value set affects all VCCs regardless of their individual traffic profile settings.

Possible values: from 353 through 353,208.

Default: 353,208 (approximately 150 Megabits per second).

Total # Simultaneous SVC calls in progress

Sets the maximum number of ATM calls in progress. Calls that exceed the limit are queued (delayed) until they can be processed.

Possible values: 1 to 128.

Default: 128.

ATM Network Advanced Parameters

To view and edit advanced network parameters for the ATM network, select **Advanced Parameters** on the **ATM Network Setup** screen.

Advanced Parameters - Port 21

SSCOP:

Maximum Receive Window Size (bytes):

65535

Maximum Connection Control States:

4

Maximum Poll Data States:

4

Maximum Number Elements in STAT PDU:

67

Maximum SDU Size (bytes):

4096

Maximum UU Size (bytes):

4096

Poll Timer (msec):

300

STAT PDU Timeout (sec):

7

Keep Alive Timer (sec):

1

Idle Timer (sec):

2

Connection Control Timer (tenths of sec):

1

Signal Timing Settings (in seconds):

T301: 180

T309: 1

T316: 120

T303: 4

T310: 10

T317: 60

T308: 30

T313: 4

T322: 4

Return

Return to previous menu

The following items are available in the **SSCOP** section of the screen:

SSCOP

Maximum Receive Window Size

Sets the maximum SSCOP protocol receive window size in bytes.
Possible values: 1 to 16,777,215.
Default: 65,536.

Maximum Connection Control States

Sets the maximum number of transmissions of a BGN, END, ER or RS protocol data unit.
Possible values: 1 to 255.
Default: 4.

Maximum Poll Data States

Sets the maximum number of data packet transmissions between polls.
Possible values: 1 to 255.
Default: 4.

Maximum Number Elements in STAT PDU

Sets the maximum number of list elements placed in a STAT PDU.

Possible values: *3* to *1023*.

Default: *67*.

Maximum SDU Size (bytes)

Sets the maximum size of the service data unit (SDU) in bytes.

Possible values: *512* to *16,384*.

Default: *4096*.

Maximum UU Size (bytes)

Sets the maximum size of the user-to-user (UU) unit in bytes.

Possible values: *512* to *16,384*.

Default: *4096*.

Poll Timer (msec)

Sets the frequency at which the peer receiver is polled for status in milliseconds.

Possible values: *1* to *10,000*.

Default: *300*.

STAT PDU Timeout (sec)

Sets the maximum time interval during which at least one STAT PDU must be received. The value must be at least SscopTimer_NO_RESPONSE + round-trip delay.

Possible values: *1* to *255*.

Default: *7*.

Keep Alive Timer (sec)

Sets the value of the Keep Alive Timer variable. As a guideline, set the value greater than Timer_POLL and round-trip delay.

Possible values: *1* to *255*.

Default: *1*.

Idle Timer (sec)

Defines the idle period during which no POLL PDUs are sent, and when there are no unacknowledged SD PDU transmits. The value set may be much greater than Timer_KEEP_ALIVE.

Possible values: *1* to *255*.

Default: *2*.

Connection Control Timer (tenths of sec)

Sets the value of the Connection Control Timer variable. As a guideline, set the value greater than Timer_POLL and round-trip delay.

Possible values: 1 to 255.

Default: 1.

Signal Timing Settings (in seconds)

This section of the screen contains advanced signalling parameters as described below.

T301

The maximum time to wait for CONNECT after receiving ALERT. The value must be a minimum of 180 seconds.

Possible values: from 1 to 65,535.

Default: 180.

T303

The maximum time to wait for network response to SETUP.

Possible values: 1 to 255.

Default: 4.

T308

The maximum time to wait for network response to RELEASE.

Possible values: 1 to 255.

Default: 30.

T309

The maximum time allowed for SAAL connection loss.

Possible values: 1 to 255.

Default: 1.

T310

The maximum time to wait for final response after receiving CALL PROCEEDING.

Possible values: 1 to 255.

Default: 10.

T313

The maximum time to wait for response to CONNECT.

Possible values: 1 to 255.

Default: 4.

T316

The maximum time to wait for response to RESTART.

Possible values: 1 to 255.

Default: 120.

T317

The maximum time to act on RESTART. The value set should be less than T316.

Possible values: 1 to 255.

Default: 60.

T322

The maximum time to wait for response to STATUS ENQUIRY.

Possible values: 1 to 255.

Default: 4.

These values correspond to the standard values used on ordinary Token-Ring ports. Actually, slightly larger frame sizes are allowed to accommodate the frame sizes defined by the ATM Forum LAN Emulation standard.

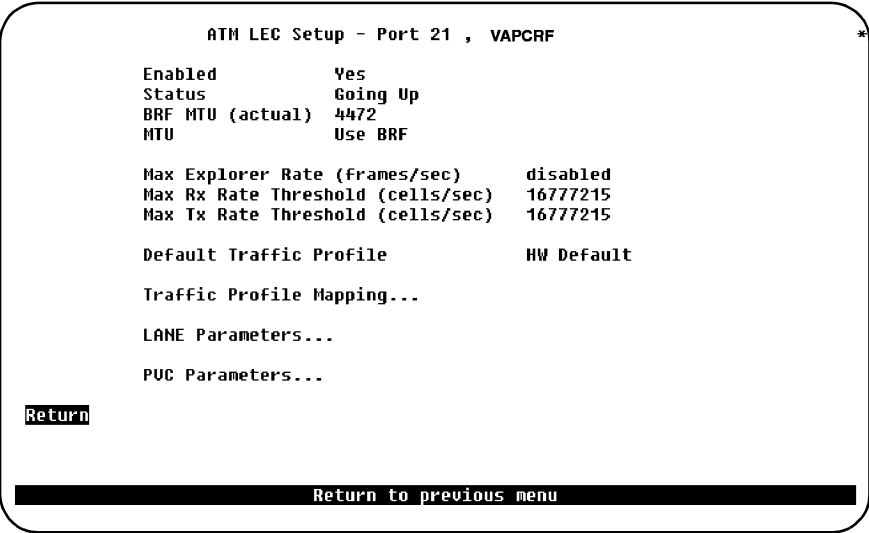
The following table shows the configured and actual frame size, as well as the corresponding largest frame size bits that are used in explorer RIF expansion:

| MTU Configured | TR-LANE Max Data frame size | LF bits |
|-------------------|-----------------------------------|---------|
| 1500 | 1516 | 001 |
| 4472 | 4544 | 011 |
| 8144 | 9234 | 100 |
| 17800 | 18190 | 110 |

Table 5. Configured and Actual Frame Size

ATM LEC Main Configuration Screen

To view and edit the ATM LEC setup, select ATM LEC Setup from the **ATM Configuration** menu. If there are multiple VAPs, you will be prompted for the VAP you want to configure. The VAP name is shown in the title bar.



Enabled

Sets the administrative state of the Virtual ATM Port (VAP) connecting the CRF to the ELAN. Possible values are Yes and No.

Status

The following table shows the current status information of the VAP.

| Value | Meaning |
|------------------------------|--|
| <i>Admin Down</i> | The VAP is disabled |
| <i>Going Admin Down</i> | The VAP is changing to the Admin Down State |
| <i>Waiting for Module Up</i> | The VAP is waiting for the port to come up. The port may be administratively disabled |
| <i>Going Up</i> | The VAP is waiting for the port to come up or is trying to connect to LAN Emulation Services |

Table 6. Current Status Information of the VAP

| Value | Meaning |
|-------------------|----------------------------------|
| <i>Up</i> | The VAP is up but not forwarding |
| <i>Forwarding</i> | The VAP is up and forwarding |

Table 6. Current Status Information of the VAP

MTU

ATM Forum: C3

Sets the Maximum Transmission Unit of the ELAN.

Possible values: *1500* and *4472*, *8144*, *17800* and *Use BRF* (default.).

These values correspond to the standard values used on ordinary Token Ring ports. Actually, slightly larger frame sizes are allowed to accommodate the frame sizes defined by the ATM forum LAN Emulation standard.

The following table shows the configured and actual frame size, as well as the corresponding largest frame size bits that are used in explorer RIF expansion:

| MTU Configured | TR-LANE Max Data frame size | LF bits |
|----------------|-----------------------------|---------|
| 1500 | 1516 | 001 |
| 4472 | 4544 | 011 |
| 8144 | 9234 | 100 |
| 17800 | 18190 | 110 |

Table 7. Frame Sizes Used in Explorer RIF Expansion

The actual MTU for the BRF is also displayed. If Use BRF is selected, the BRF value will be used. Otherwise, the lowest of the BRF MTU and port MTU values will be used. Thus, a port will never have a higher MTU than its BRF.

Max Explorer Rate (frames/sec)

The maximum explorer frame forwarding rate in frames per second.

Possible values: *Disabled* (default) and from *0* through *5000*.

Max Rx Rate Threshold (cells/sec)

Sets the maximum difference between the requested receive rate of an incoming LANE call and the line rate, above which the call is rejected with the cause “User cell rate not available”. Note that the default value of this parameter effectively disables checking of the requested receive rate. Checking is disabled to ensure interoperability with equipment that does not handle call rejection with the cause “User cell rate not available”. To enable checking, set a smaller value (for example 2000 cells/sec).

Possible values: from 0 through 16,777,215 (default).

Max Tx Rate Threshold (cells/sec)

Sets the maximum difference between the requested transmit rate of an incoming call (the backward rate) and the closest matching traffic profile, above which the call is rejected with the cause “User cell rate not available”. Note that the default value of this parameter effectively disables checking of the requested transmit rate. Checking is disabled to ensure interoperability with equipment that does not handle call rejection with the cause “User cell rate not available”. To enable checking, set a smaller value (for example 2000 cells/sec).

Possible values: from 0 through 16,777,215 (default).

Default Traffic Profile

Sets the default traffic profile to use when the VCC being opened has no associated traffic profile. The default profile can be selected from the list of defined profiles.

Default: *HW Default*.

Traffic Profiles

Traffic profiles describe the characteristics of the transmitted data. All VCCs (SVC or PVC) created by the uplink software and the LES are assigned a traffic profile, and for the typical ATM LAN setup, the default profile is sufficient.

However, under certain circumstances it may be necessary to change the traffic profiles and their usage. This can often be the case with ATM WAN connections, where bandwidth is pre-configured and/or priced, or where multiple switches using multiple line-speeds (for example 25 Mbps, 34 Mbps, 43 Mbps, 100 Mbps or 155 Mbps) are used together with devices that are unable to perform or to signal speed conversion.

A simple overall configuration variable `MaxLineRate` can be set to limit the total peak-rate of the physical link between the uplink and the switch. This will affect all VCs regardless of their individual traffic profile settings.

The traffic profile parameters are as follows:

Traffic Type

This value tells the switches involved in forwarding data traffic on a particular VCC what type of traffic to expect.

Peak Rate (cells/sec)

This value specifies the maximum rate at which the VCC will transmit data.

Sustained Rate (cells/sec)

This value specifies the average rate at which the VCC will transmit data.

Maximum Burst Size (cells)

This value specifies the maximum number of cells sent at peak rate before subsequent cells are sent at sustained rate.

Quality of Service

This value tells the switches involved in forwarding data traffic on a particular VCC what QoS (or priority) the data traffic should be given.

The module hardware supports up to 63 concurrent traffic profiles. In addition to this a “hardware default” traffic profile (full line rate) is defined.

Cell rates are approximated by the hardware, so the actual Peak/Sustained cell rates used are as close to the specified values as permitted by the hardware.

Statistics programs may therefore show cell rates as being slightly different from the rates specified in the configuration.

Traffic profiles are used in three different situations, listed below, which again require three different methods for assigning the correct traffic profiles to the correct VCC.

1. PVCs are assigned a designated traffic profile when they are created during startup. The designated profile is simply specified in the configuration.
2. For SVC incoming calls, the module software tries to find the traffic profile that best matches the traffic parameters in the call. If the difference between the incoming rate and the closest match is above a certain threshold, the call is rejected with the cause code “User cell rate not available”. This behavior can be controlled with the VAP configuration parameters `MaxReceiveRateDifference` and `MaxTransmitRateDifference`.
3. For SVC outgoing calls, a traffic profile mapping is used for SVC creation. The traffic profile mapping is defined per VAP, and contains the following parameters:

Address Mask: The VCC destination address is logically ANDed with the Address Mask before being compared to the ATM address parameter of the traffic profile map. This can be used to “mask” parts of the 20 2-digit hexadecimal number ATM address taking part in the comparison.

ATM Address: This ATM address is compared to the destination address (after it has been ANDed with the address mask) for the VCC to be opened.

VCC Type: This VCC type must match the type of the VCC to be opened (wildcards are possible).

Traffic Profile List: The listed traffic profiles are tried in succession until one is accepted by the destination end station.

These parameters are used when a new VCC is to be opened. A traffic profile map will be selected if the VCC type and ATM address (masked by the address mask) match, and the traffic profile from the traffic profile list will be tried.

Traffic Profile Mapping Configuration

To view and edit traffic profile mappings, select **Traffic Profile Mapping** from the **ATM LEC Setup** screen.

Traffic Profile Mapping - Port 21 , VAPCRF, Map 0

| | |
|---------------------|---|
| Target ATM Address: | 00.000000000000000000000000.000000000000.00 |
| ATM Address Mask: | 00.000000000000000000000000.000000000000.00 |
| VCC Type: | Any |
| Profile 0: | 0 |
| Profile 1: | 1 |
| Profile 2: | 2 |
| Profile 3: | 3 |
| Profile 4: | 4 |
| Profile 5: | 5 |
| Profile 6: | 6 |
| Profile 7: | 7 |
| Profile 8: | 8 |
| Profile 9: | 9 |

Return

Return to previous menu

Target ATM Address

Specifies the target ATM address. This address is compared with the destination address (after it has been ANDed with the address mask) for the VCC to be opened.

ATM Address Mask

Specifies the ATM address mask. The VCC destination address is logically ANDed with the address mask before being compared with the ATM address parameter of the traffic profile map.

VCC Type

Specifies the type of VCC to match when opening the VCC. Possible values are DataDirect, ControlDirect, ControlDistribute, MulticastSend, MulticastForward and Any (Default).

Profile n

Specifies the traffic profiles to be tried when establishing a new VCC.

Traffic profiles are defined in the traffic profiles table screen. See the section “ATM Traffic Profile Configuration” on page 38 for information on defining traffic profiles.

ATM LANE Parameters Configuration

To view and edit ATM LANE parameters, select **LANE Parameters** on the **ATM LEC Setup** screen.

LANE Parameters - Port 21 , VAPCRF

LANE ATM Address: Automatic

LAN Emulation Server (LES) Address: Automatic

LAN Emulation Configuration Server (LECS):

UPI: 0 UCI: 17 Address: 00.000000000000000000000000.000000000000.00

LAN Emulation Client:

ELAN Name: VAPCRF

Guaranteed # of VCCs: 5

Guaranteed # of LE-ARP Entries: 5

Max Unknown Frame Count: 1

Max Unknown Frame Time (sec): 1

Max Retry Count: 1

Connection Complete Timer: 4

Control Timeout (sec): 120 UCC Timeout (sec): 1200

Aging Timeout (sec): 300 FLUSH Timeout (sec): 4

Forward Delay Time (sec): 15 Expected ARP Resp time (sec): 1

Return

Return to previous menu

LANE ATM Address

ATM Forum: C1

The ATM address for the ELAN can be assigned manually or automatically. If you select Automatic, the address is constructed using a 13 byte address prefix provided by the ATM switch, the 6 byte burned-in MAC address of the STS16-20RM, and a 1 byte selector. The selector is used to distinguish between different VAPs. If you select Manual, you will be prompted for an address. If ILMI is disabled, the ATM address must be specified manually.

The default value is Automatic.

LAN Emulation Server (LES) Address

ATM Forum: C9

The ATM address of the LES for this ELAN. The address specified must be different from all client ATM addresses. There is no default address.

LAN Emulation Configuration Server (LECS)

The module port uses the method shown in Figure 7 to get in contact with LAN emulation services. The figure shows how specification of the LES address, LECS PVC (VPI/VCI) or LECS address can be used to identify particular LAN emulation services.

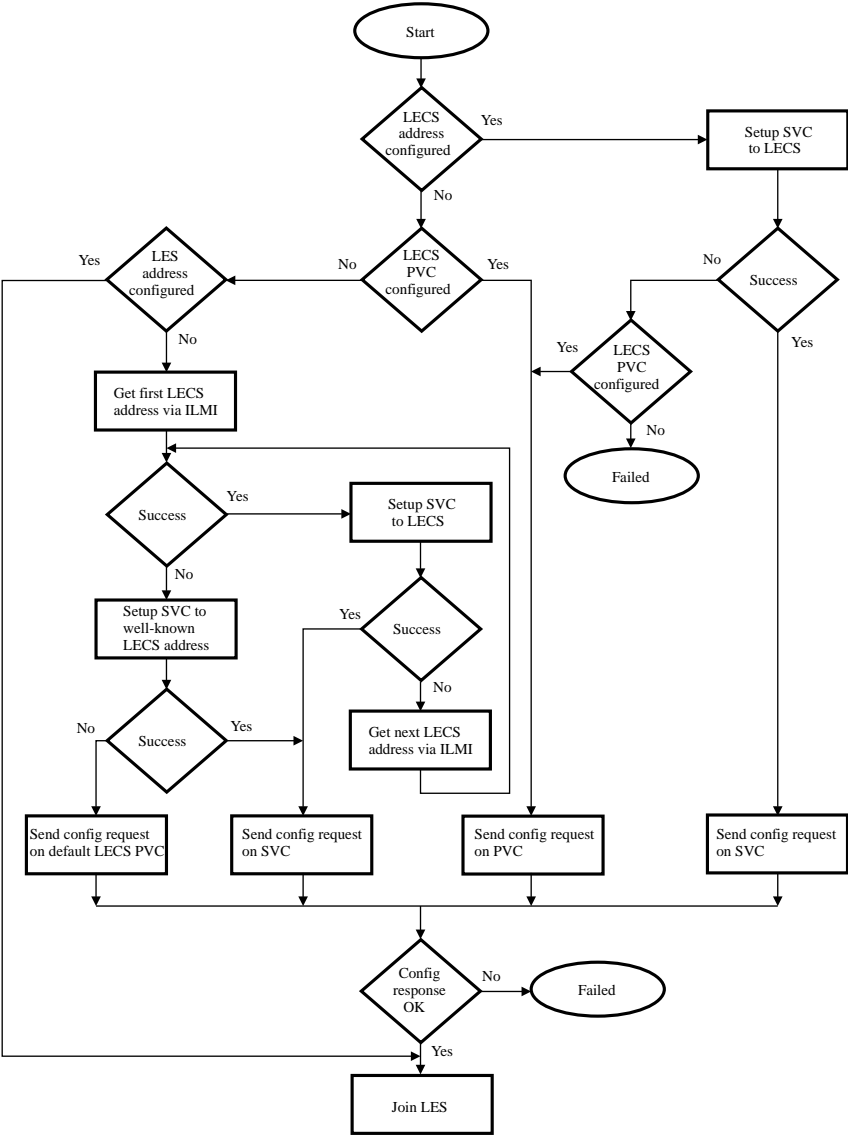


Figure 7. Contacting LAN Emulation Services

VPI

Sets the virtual path identifier of the LECS PVC.

Possible values: 0 (default), 1, 2 and 3.

VCI

Sets the virtual channel identifier of the LECS PVC.

Possible values: 0 (default) to 4095.

Address

Specifies the ATM address of the LECS.

LAN Emulation Client**ELAN Name**

ATM Forum: C5

Sets the name of the preferred ELAN to join. The default value is the name of the CRF to which the VAP is assigned. If a VAP is assigned to the default CRF, the ELAN name defaults to an empty string.

Guaranteed # of VCCs

Sets the guaranteed number of VCCs for the ELAN. The sum of all ELAN guaranteed VCCs cannot exceed the maximum number of active VCCs.

Possible values: 5 to 2048.

Default: 5.

Guaranteed # of LE-ARP Entries

Sets the guaranteed number of LE-ARP entries available to the VAP.

Possible values: 2 to 4096.

Default: 2.

Max Unknown Frame Count

ATM Forum: C10

Sets the maximum number of frames that the LANE client will send to the BUS in a period of MaxUnknownFrameTime seconds (see below), before the LANE client begins to resolve the LANE destination using LE_ARP.

Possible values: 1 to 10.

Default: 1.

Max Unknown Frame Time (sec)

ATM Forum: C11

Sets the time period in seconds in which the LANE client can send a maximum of MaxUnknownFrameCount frames (see above) to the BUS, before the LANE client begins to resolve the LANE destination using LE_ARP.

Possible values: 1 to 60.

Default: 1.

Max Retry Count

ATM Forum: C13

Sets the maximum number of retries after a failed LE_ARP request.

Possible values: 0, 1 (default) and 2.

Connection Complete Timer

Sets the time in seconds after which a READY_IN is expected from a called party.

Possible values: 1 to 10.

Default: 4.

Control Timeout (sec)

ATM Forum: C7

Sets the standard timeout period in seconds that is used for most request/response control frame interactions.

Possible values: 10 to 300.

Default: 10.

Aging Timeout (sec)

ATM Forum: C17

Sets the maximum time in seconds that the LANE client will maintain a local LAN destination in its ARP cache in the absence of a verification.

Possible values: 10 to 300 (default).

Forward Delay Time (sec)

ATM Forum: C18

Sets the maximum time in seconds that a LANE client will maintain an entry for a non-local MAC address in its LE_ARP cache in the absence of verification.

Possible values: 4 to 30.

Default: 15.

VCC Timeout (sec)*ATM Forum: C12*

Sets the VCC timeout period in seconds. A LANE client must release any data direct VCC (DD-VCC) that has not been used to transmit or receive any data frames for the length of the VCC timeout period. This parameter is only valid for SVC DD-VCCs. Setting this parameter to 0 will disable the releasing of unused DD-VCCs. Possible values: 10 to 1200 (default).

FLUSH Timeout (sec)*ATM Forum: C21*

The maximum time in seconds that the LANE client will wait for a FLUSH response after sending a FLUSH request. Possible values: 1 to 4 (default).

Expected ARP Resp time (sec)*ATM Forum: C20*

Sets the expected LE_ARP response time in seconds. The setting is used for retries and verifications. Possible values: 1 (default) to 30.

ATM LEC PVC Configuration

To view and edit PVC parameters, select **PVC Parameters** from the **ATM LEC Setup** screen.

PVC Parameters - Port 21 , VAPCRF

| ID | VPI | VCI | ATM Address | VCC type | Profile |
|----|-----|-----|---|----------|---------|
| 0 | 0 | 100 | 39.00000000000000000000000000.000000000000.00 | Direct | 0 |

Return

More

Add

Delete

Return to previous menu

ID

The system-supplied ID for the PVC. The ID is used when selecting a PVC for delete.

VPI

Specifies the virtual path identifier of the PVC.

VCI

Specifies the virtual channel identifier of the PVC.

ATM Address

The ATM address of the peer (far side of the PVC).

VCC type

The type of the PVC. Possible values are Data, Direct (default), Distribute, Send and Forward.

Profile

Specifies the traffic profile of the PVC. The setting is relevant only when a non-default traffic profile is needed.

ATM Traffic Profile Configuration

For a discussion of the traffic profile concept, refer to the section “Traffic Profiles” on page 29.

To view and edit the ATM traffic profiles, select **Traffic Profiles Table** from the **ATM Configuration** screen. The following information is displayed.

| Traffic Profiles Table – Port 21 | | | | | |
|--|--------------|------|-----------|----------------|----------------|
| Pr | Traffic Type | QoS | Peak Rate | Sustained Rate | Max Burst Size |
| 0 | BestEffort | None | 353208 | N/A | N/A |
| 1 | BestEffort | None | 235849 | N/A | N/A |
| 2 | BestEffort | None | 96000 | N/A | N/A |
| 3 | BestEffort | None | 81056 | N/A | N/A |
| 4 | BestEffort | None | 59259 | N/A | N/A |
| 5 | BestEffort | None | 23585 | N/A | N/A |
| 6 | BestEffort | None | 2358 | N/A | N/A |
| 7 | BestEffort | None | 1208 | N/A | N/A |
| 8 | BestEffort | None | 604 | N/A | N/A |
| 9 | BestEffort | None | 353 | N/A | N/A |
| 10 | BestEffort | None | 0 | N/A | N/A |
| 11 | BestEffort | None | 0 | N/A | N/A |
| 12 | BestEffort | None | 0 | N/A | N/A |
| 13 | BestEffort | None | 0 | N/A | N/A |
| 14 | BestEffort | None | 0 | N/A | N/A |
| <div><div>Return</div><div>More</div><div>Change</div></div> | | | | | |
| Return to previous menu | | | | | |

Pr

The traffic profile number, used to identify a row of traffic parameters for use in other panels.

Traffic Type

Sets the traffic type for use with the traffic profile. Possible values are NoClpNoScr, NoClpScr, ClpNoTaggingScr, ClpTaggingScr and BestEffort (default). See the UNI 3.x specification for a description of the traffic types.

QoS

Sets the quality of service for the traffic profile.
Possible values: *None* (default), *Class1*, *Class2*, *Class3* and *Class4*.

Peak Rate

Specifies the maximum rate in cells/sec that data will be transmitted. Cell rates are approximated by the hardware, so the actual peak cell rates used are as close to the specified rates as permitted by the hardware. Consequently, statistics programs may show cell rates as being slightly different from the specified rates.

Possible values: from 353 through 353,208 (default).

Sustained Rate

Specifies the average rate in cells/sec that data will be transmitted. Cell rates are approximated by the hardware, so the actual sustained cell rates used are as close to the specified rates as permitted by the hardware. Consequently, statistics programs may show cell rates as being slightly different from the specified rates.

Possible values: 353 to 353,208 (default).

Max Burst Size

Specifies the maximum number of cells sent at peak rate before the transmission rate is reduced to the sustained rate.

Possible values: 0 to 356.



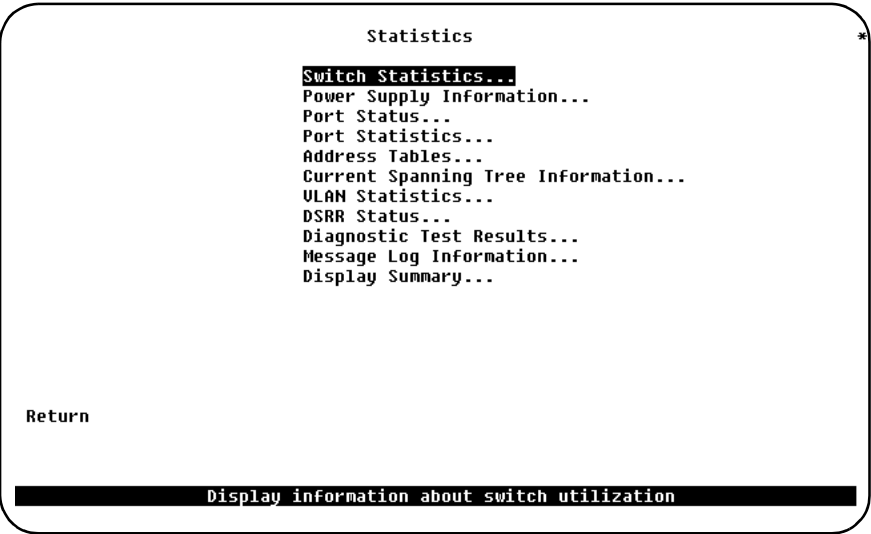
4. Statistics

A wide range of statistics is available for the SSIM-Ax-01 ATM 155 Uplink Module. The following topics are discussed in this chapter:

- Statistics Menu
- Port Status
- Port Statistics
- General ATM Statistics
- LEC Statistics
- Frame-Forwarding Statistics
- LANE Status
- Server VCC Table
- LE-ARP Table
- Route Descriptor Table
- LEC VCC Statistics
- VCC Statistics

Statistics Menu

To access the statistics menu, select Statistics from the Main menu. The following menu is displayed:



The menu items shown in the illustration above are described in the manual you received with your STS16-20RM Token-Ring Switch. For more information about the menu items, refer to that manual.

Several of the menu items contain additional information relating to the SSIM-Ax-01 ATM 155 Uplink Module. They are as follows:

- **Port Status**—The SmartStack SSIM-Ax-01 is included in the overview of all ports in the system.
- **Port Statistics**—By selecting this item and entering the port number of the SSIM-Ax-01 ATM module, you will be presented with a menu containing a wide range of statistics for the SSIM-Ax-01 ATM module.
- **Address Table**—The address table will contain addresses located on the ATM side of an SSIM-Ax-01 ATM module.
- **Message Log Information**—The message log can contain messages relating to the SSIM-Ax-01 ATM module.

Port Status

To access the port status screen, select Port Status from the Statistics menu. The SSIM-Ax-01 ATM 155 Uplink Module will be listed as port 21 or port 25. A sample screen is shown below.

| Port Status | | | | | | | | |
|-------------|---------------|---------------|------------|-----|-----|-------------|-----------|--|
| Port | TrCRF | TrBRF | Enabled | Ins | Spd | Oper Mode | Fwd Mode | |
| 16 | trcrf-default | trbrf-default | Yes | Yes | 16 | HDX station | Cut-Thru | |
| 17 | trcrf-default | trbrf-default | Yes | No | | | | |
| 18 | trcrf-default | trbrf-default | Yes | No | | | | |
| 19 | trcrf-default | trbrf-default | Yes | No | | | | |
| 20 | trcrf-default | trbrf-default | Yes | No | | | | |
| 21 | CRF_ZERO | BRF1 | Forwarding | | 155 | ATM ELAN | Store-Fwd | |
| 21 | VAPCRF | BRF2 | Forwarding | | 155 | ATM ELAN | Store-Fwd | |
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Port

Shows the port number of the port, used to identify the port on the system.

TrCRF

Shows the name of the CRF that the port or VAP belongs to.

TrBRF

Shows the name of the BRF that the port or VAP belongs to.

Enabled/Ins

For Ordinary Token-Ring ports, this is the enabled and inserted status. This does not apply to VAPs on an ATM port. Instead the current state at the VAP is displayed. Please refer to the description of ATM LEC (VAP) Configuration for details.

Spd

Shows the operating speed of the port or VAP in megabits per second.

Oper Mode

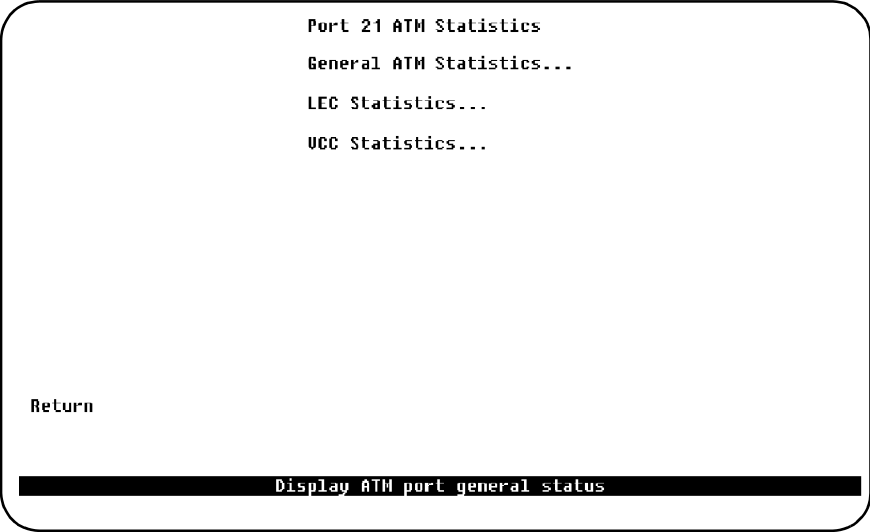
The operation mode is always displayed as ATM ELAN for ATM VAPs.

Fwd Mode

The forwarding mode is always displayed as Store-Fwd, since the module always operate in the store-and-forward switching mode.

Port Statistics

The **ATM Statistics** menu provides access to ATM-specific statistics. To show the menu, select **Port Statistics** from the **Statistics** menu and type the port number.



General ATM Statistics

To view general ATM statistics, select **General ATM Statistics** on the **ATM Statistics** menu.

Port 21 General ATM Statistics

General Statistics:

Receive

Transmit

Total Bytes

821262

496322

Unicast Frames

18249

12123

Discarded Frames

0

0

Errors

0

Diagnostics:

Queue Length

0

Bad Channel

0

Invalid Tag

0

Unknown UCC

0

Dropped Frames

0

Long Frames

0

CRC Errors

0

Short Frames

1

Overflow Errors

7

ATM Interface TC Table:

Number of times cable has been removed:

0

Cable insertion state

: Cable Inserted

Last Total Reset

: 2 Hr, 50 Min, 54 Sec

Return

Reset_ALL_Stats

Getting data from module. Please wait...

Return to previous menu

General Statistics

Total Bytes

The total number of bytes sent or received on the ATM network (the AAL5 payload).

Unicast Frames

The number of AAL5 frames (frames for specific network devices) sent or received on the ATM network.

Discarded Frames

The number of sent or received AAL5 frames that were discarded.

Errors

The number of sent or received frames that encountered an error.

Diagnostics

Queue Length

The number of frames currently in the ATM transmit queue.

Invalid Tag

The number of frames in the transmit direction (to ATM) that were dropped due to an invalid tag.

Dropped Frames

The number of frames dropped due to receive congestion at the beginning of the frame.

CRC Errors

The number of frames received from the ATM network with CRC errors.

Overflow Errors

The number of frames dropped due to receive congestion after the module has started receiving the frame.

Bad Channel

The number of frames in the transmit direction (to ATM) that were dropped due to a bad channel state (the channel selected by the frame tag was not in use).

Unknown VCC

The number of frames received from the ATM network on a VCC that has not been activated.

Frame too Long

The number of frames received from the ATM network with a length greater than the maximum length receivable.

Frame too Short

The number of frames received from the ATM network with less than the minimum data content.

ATM Interface TC Table**Number of times cable has been removed**

The number of times the out of cell delineation (OCD) event has occurred. When seven consecutive ATM cells have header error control (HEA) violations, an OCD event occurs. A high number of OCD events may indicate a problem with the TC sublayer.

Cable insertion state

Shows the current cable insertion state.

LEC Statistics

The **LEC Statistics** menu provides access to statistics that are relevant for emulated LANs.

```
Port 21 LEC Statistics Menu - VAPCRF
Frame Forwarding Statistics...
LANE Status...
Server UCC Table...
LE-ARP Table...
Route Descriptor Table...
LEC UCC Statistics...
```

Return

Return to previous menu

Frame-Forwarding Statistics

The **Frame Forwarding Statistics** screen provides statistics for traffic received on the ATM network for a particular ELAN. All statistics shown are for this VAP.

Port 21 Frame Forwarding Statistics - VAPCRF

| | | | | |
|------------------------|------------|------------------------|----------------------|------------|
| Bytes Received | 13218 | Long Frames | 0 | |
| Bytes Transmitted | 11736 | Duplicate Ring Number | 0 | |
| Bytes Forwarded | 9258 | Ring Number Mismatch | 50 | |
| ARP Requests Rx | 65 | Invalid RIF RC Field | 30 | |
| ARP Requests Tx | 34 | RIF Length Exceeded | 60 | |
| ARP Replies Rx | 4 | Explorer Overflow | 0 | |
| ARP Replies Tx | 4 | Frames Filtered - Addr | 0 | |
| Control Frames Rx | 77 | Frames Filtered - DSAP | 0 | |
| Control Frames Tx | 44 | TrCRF Filtered | 0 | |
| SVC Failures | 0 | ELAN Down | 0 | |
| # Least Act UCC Disc | 0 | Blocked | 0 | |
| # Least Act UCC Found: | 0 | Last Reset | 2 Hr, 53 Min, 52 Sec | |
| Type | NSR Frames | SR Frames | STE Frames | ARE Frames |
| Rx Unicast | 15 | 20 | 0 | 170 |
| Rx Broadcast | 0 | 0 | 0 | 0 |
| Rx Multicast | 0 | 0 | 0 | 0 |
| Rx Forwarded | 15 | 10 | 0 | 120 |
| Transmitted | 10 | 70 | 0 | 100 |

Return

Reset_Stats

Return to previous menu

Bytes Received

The total number of bytes received on this VAP from the ATM network.

Bytes Transmitted

The total number of bytes transmitted on this VAP to the ATM network.

Bytes Forwarded

The total number of bytes forwarded from ATM to other switch ports.

ARP Requests Rx

The number of LE_ARP_REQUESTs received from the ATM network by the LEC. Requests may arrive on the Control Direct VCC or on the Control Distribute VCC, depending on how the LES is implemented and the opportunity it has had for learning. This counter covers both VCCs.

ARP Requests Tx

The number of LE_ARP_REQUESTs sent by the LEC to the ATM network.

ARP Replies Rx

The number of LE_ARP_RESPONSEs received by the LEC from the ATM network. The counter includes both solicited and unsolicited replies. Replies may arrive on the Control Direct VCC or on the Control Distribute VCC, depending on how the LES is implemented. This counter covers both VCCs.

ARP Replies Tx

The number of LE_ARP_RESPONSEs transmitted by the LEC on this VAP.

Control Frames Rx

The total number of control packets received by the LEC on this VAP.

Control Frames Tx

The total number of control packets sent by the LEC on this VAP.

SVC Failures

The total number of

- a) outgoing LAN Emulation SVCs that the client tried to open and failed
- b) incoming LAN Emulation SVCs that the client tried to establish and failed, and
- c) incoming LAN Emulation SVCs that the client rejected for protocol or security reasons.

Least Act VCC Disc

The number of times the VCC table has been full, and the least active VCC has been disconnected on this VAP.

No Least Act VCC Found

The number of times the VCC table has been full, and no least active VCC could be found.

Long Frames

The number of frames received from the ATM network that exceeded the configured maximum frame length.

Duplicate Ring Number

The number of times a frame containing a duplicate ring number in the RIF field has been detected on the ATM network.

Ring Number Mismatch

The number of times an incoming frame did not include the VAP's ring number correctly.

Invalid RIF RC Field

The number of times a frame containing an illegal routing control field has been detected by the VAP.

RIF Length Exceeded

The number of frames detected by the VAP where the frame contains a RIF field that is too long.

Explorer Overflow

The number of times an explorer frame from the ATM network was dropped due to explorer rate throttling on this VAP.

Frames Filtered - Addr

The number of frames filtered by the MAC address filters on this VAP.

Filtered - DSAP

The number of frames filtered by the protocol filters on this VAP.

TrCRF Filtered

The number of frames filtered on this VAP because the destination address was an ATM address.

ELAN Down

The number of frames that were forwarded from other switch ports, but not forwarded to ATM because the VAP was down (not operational).

Blocked

The number of frames not forwarded to the ATM network due to the blocking state of a VAP.

Last Reset

The time since the ELAN was started or last reset.

NSR Frames

The number of non source routed frames transmitted or received on the ATM network on this VAP.

SR Frames

The number of specifically routed frames transmitted or received on the ATM network on this VAP.

STE Frames

The number of spanning-tree explorer frames transmitted or received on the ATM network on this VAP.

ARE Frames

The number of all-routes explorer frames transmitted or received on the ATM network on this VAP.

Type**Rx Unicast**

The number of frames received on this VAP with a non-broadcast destination address.

Rx Broadcast

The number of frames received on this VAP with a broadcast destination address.

Rx Multicast

The number of frames received on this VAP with a multicast destination address.

Rx Forwarded

The number of frames forwarded on this VAP from ATM to other switch ports.

Transmitted

The number of frames transmitted to the ATM network.

LANE Status

The **LANE Status** screen displays the status for a VAP.

```

Port 21 LANE Status - VAPCRF
ELAN State: Forwarding
ELAN Name : VAPCRF
ELAN Type : 802.5

Primary ATM Address: 39.840F800000000000024902715.02000000A0000.03
LECS ATM Address : 47.007900000000000000000000.00A03E000001.00
LES ATM Address : 39.840F80000000000000024902715.000024902715.06

LEC Status:
  LEC ID: 5          Protocol: 1          Version: 1
  IF State           : Operational
  Topology Change    : FALSE
  Configuration Source : Used Well Known Address
  Actual Max frame Size : 4544

Last Failure:
  Response Code       : None
  IF State            : Initial State
Return

```

Return to previous menu

ELAN State

The forwarding state of the VAP.

ELAN Name

The name of the emulated LAN that this LEC last joined or wishes to join.

ELAN Type

The data frame format that the LAN Emulation Client is using. For the SSIM-Ax-01 mounted in the STS16-20RM Token-Ring Switch, the ELAN type will always be 802.5 (Token Ring).

Primary ATM Address

The primary ATM address of the LAN Emulation Client. This address is used to establish the Control Direct and Multicast Send VCCs, and can also be used to set up Data Direct VCCs.

LECS ATM Address

The ATM address of the LAN Emulation Configuration Server (if known).

LES ATM Address

The LAN Emulation Server address currently in use or most recently attempted.

LEC Status

LEC ID

The LAN emulation client ID. During the join phase, the LAN emulation server assigns each client with a client identifier (LECID). The LECID is placed in control requests by the LEC and can be used for echo suppression on multicast data frames. Valid LECIDs are from X'0001' through X'FEFF'. For LECs that do not belong to an emulated LAN, the LECID is 0.

Protocol

The LAN emulation protocol supported by the client, and specified in the client's LE_JOIN_REQUESTs.

Version

The LAN emulation protocol version supported by the client, and specified in the client's LE_JOIN_REQUESTs.

IF State

The official protocol state of a LAN emulation client. Possible values are InitialState, LecsConnect, Configure, Join, InitialRegistration, BusConnect and Operational.

Topology Change

Shows if the LEC is using the Forward Delay Time to age non-local entries in its LE_ARP cache, instead of the Aging Time. This happens when the spanning-tree protocol is in topology change mode.

Configuration Source

Shows if the LEC used the LAN Emulation Configuration Server, and if so, what method it used to establish the Configuration Direct VCC. Possible values are Got Address Via ILMI, Used Well-Known Address, Used LECS PVC and Did Not Use LECS.

Actual Max frame Size

Shows the maximum data frame size that the LEC is currently using.

Last Failure

The following two sections describe the two **Last Failure** items, **Response Code** and **IF State**.

Response Code

The status code from the last failed Configure response or Join response. Failed responses are those for which the LE_CONFIGURE_RESPONSE or LE_JOIN_RESPONSE frame contains a failure code, or fails to arrive within a timeout period. If none of the client's requests have failed, this field has the value None. If the failed response contained a STATUS code that is not defined in the LAN Emulation specification, this field has the value undefinedError. Possible values are None, timeout, undefinedError, versionNotSupported, invalidRequestParameters, duplicateLanDestination, duplicateAtmAddress, insufficientResources, accessDenied, invalidRequesterId, invalidLanDestination, invalidAtmAddress, noConfiguration, leConfigureError and insufficientInformation.

IF State

The state the client was in when it updated the **Response Code**. If the **Response Code** is *None*, the **IF State** is *Initial State*.

Server VCC Table

The **Server VCC Table** screen displays LANE server VCC information for a VAP.

| Port 21 Server VCC Table - VAPCRF | |
|-----------------------------------|---------|
| LEC Server | VPI/VCI |
| Configure Direct | 0/33 |
| Control Direct | 0/35 |
| Control Distribute | 0/37 |
| Multicast Send | 0/39 |
| Multicast Forward | 0/41 |
| Return | |
| Return to previous menu | |

Configure Direct

The VPI and VCI values for the VCC to the LECS. If an SVC is used, the SVC is closed after the configuration phase. If the VCCs are not in use, the values will be 0/0.

Control Direct

The VPI and VCI values for the Control Direct VCC to the LES. The Control Direct VCC is used for control frames to the LES.

Control Distribute

The VPI and VCI values for the Control Distribute VCC to the LES. The Control Distribute VCC is used for control frames from the LES.

Multicast Send

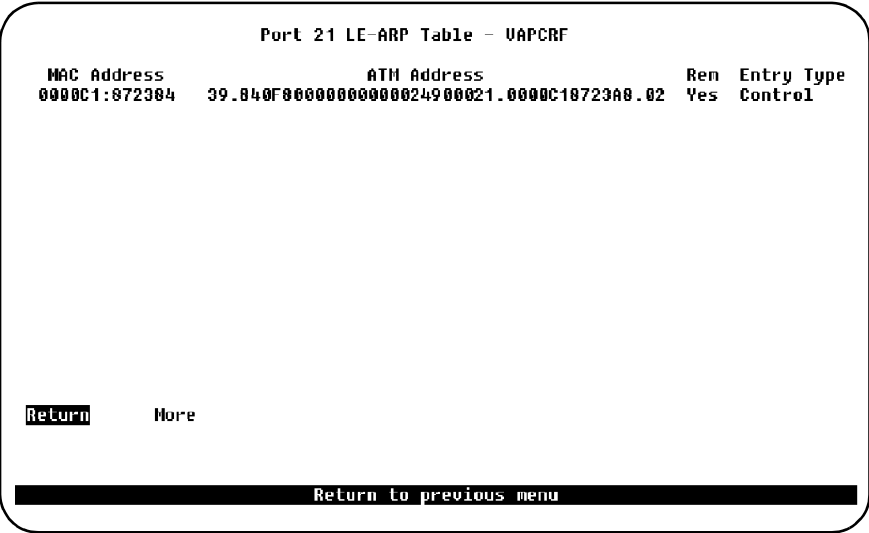
The VPI and VCI values for the MS-VCC to the LANE BUS. The MS-VCC is used by the VAP to transmit ATM broadcast frames (to the BUS).

Multicast Forward

The VPI and VCI values for the MF-VCC from the BUS. The MF-VCC is used by the BUS to distribute ATM broadcast frames (to LANE clients).

LE-ARP Table

The **LE-ARP Table** screen displays LANE address resolution information for a VAP.



MAC Address

The destination MAC address.

ATM Address

The destination ATM address.

Rem

Shows if the MAC address is represented by a proxy (a LANE bridge). Rem is an abbreviation for remote.

Entry Type

Shows how the entry was created. The entry can be created by a LANE control message (LE_ARP), learned by data, or statically configured.

LEC VCC Statistics

The **LEC VCC Statistics** screen displays VCC statistics for a VAP.

Port 21 LEC VCC Statistics - VAPCRF

| VPI/VCI | Usage | Tx Frames | Tx Bytes | Rx Frames | Rx Bytes |
|---------|--------|-----------|----------|-----------|----------|
| 0/32 | CDirec | 31 | 3348 | 12 | 1296 |
| 0/33 | CDist | 0 | 0 | 41 | 4428 |
| 0/34 | M-Send | 52 | 4442 | 0 | 0 |
| 0/35 | M-Forw | 0 | 0 | 186 | 15769 |
| 0/36 | DDirec | 15 | 1284 | 15 | 1228 |
| 0/38 | DDirec | 7 | 588 | 9 | 780 |

Return

More

Return to previous menu

VPI/VCI

The VPI/VCI value of the VCC.

Usage

Shows the VCC usage. Possible values are *Cdirec* (Control Direct), *Cdist* (Control Distribute), *M-Send* (Multicast Send), *M-Forw* (Multicast Forward) and *Ddirec* (Data Direct).

Tx Frames

The number of frames transmitted on the VCC.

Tx Bytes

The number of bytes transmitted on the VCC.

Rx Frames

The number of frames received on the VCC.

Rx Bytes

The number of bytes received on the VCC.

VCC Statistics

To view virtual channel connection statistics, select *VCC Statistics* on the **ATM Statistics** menu.

Port 21 ATM VCC Statistics

UPI: 0 UCI: 5

Usage : SSCOP

ATM Address : 00.000000000000000000000000.000000000000.00

Creation Method: System

Transmit Traffic Descriptor:

Type : Best Effort

Peak Rate: 353200

QOS : None

Frame Discard: No

Service Category: UBR

AAL5 Statistics:

CRC Errors : 0

SAR Timeouts : 0

Oversized SDUs : 0

Frames Transmitted: 67

Bytes Transmitted: 1420

Frames Received : 70

Bytes Received : 1360

Last Total Reset: 0 Hr, 3 Min, 11 Sec

Return

More

Return to previous menu

VPI

The virtual path identifier of the VCC.

VCI

The virtual channel identifier of the VCC.

Usage

Identifies the ATM components using this VCC.

ATM Address

The ATM address of the remote end of the VCC.

Creation Method

Indicates how the VCC was created.

Transmit Traffic Descriptor

Type

The traffic type of the VCC. See “Traffic Type” on page 38.

Peak Rate

The peak rate of the VCC. See “Peak Rate” on page 39.

QOS

The quality of service of the VCC. See “QOS” on page 38.

Frame Discard

Indicates if the switch is allowed to discard all complete AAL5 frames if any single cells are lost from an AAL5 frame.

Service Category

Indicates the service category of the VCC. Possible values are *UBR*, *CBR*, *VBR-Rt*, *VBR-NRT* and *ABR*.

AAL5 Statistics**CRC Errors**

The number of AAL5 frames with CRC errors received on the VCC.

SAR Timeouts

The number of SAR timeouts on the VCC.

Oversized SDUs

The number of oversized SDUs received on the VCC (frames larger than $96 + 4080$ 4080 bytes).

Frames Transmitted

The total number of frames transmitted on the VCC.

Frames Received

The total number of frames received on the VCC.

Bytes Transmitted

The total number of bytes transmitted on the VCC.

Bytes Received

The total number of bytes received on the VCC.

Last Total Reset

The elapsed time since the SSIM-Ax-01 was started or last reset.



5. Getting in Touch with Technical Support

For additional support related to this device or document, contact Cabletron Systems using one of the following methods:

| | |
|--|---|
| World Wide Web | http://www.cabletron.com/ |
| Phone | (603) 332-9400 |
| Internet mail | support@cabletron.com |
| FTP | ftp://ftp.cabletron.com/ |
| Login | <i>anonymous</i> |
| Password | <i>your email address</i> |
| To send comments or suggestions concerning this document, contact the Cabletron Systems Technical Writing Department via the following email address: TechWriting@cabletron.com <i>Make sure to include the document Part Number in the email message.</i> | |

Before calling Cabletron Systems, have the following information ready:

- Your Cabletron Systems service contract number
- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Cabletron Systems products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

Appendix A. Abbreviations

| | |
|-----------------|---|
| AAL | ATM Adaption Layer |
| ARE | All-Route Explorer |
| ARP | Address Resolution Protocol |
| ATM | Asynchronous Transfer Mode |
| BRF | Bridge Relay Function |
| BUS | Broadcast and Unknown Server |
| CD-VCC | Control Distribute VCC |
| CDIR-VCC | Control Direct VCC |
| CRC | Cyclic Redundancy Check |
| CRF | Concentrator Relay Function |
| DD-VCC | Data Direct VCC |
| ECO | Engineering Change Order |
| ELAN | Emulated LAN |
| FCS | Frame Check Sequence |
| ILMI | Interim Local Management Interface |
| IP | Internet Protocol |
| LAN | Local Area Network |
| LANE | LAN Emulation |
| LE-ARP | LAN Emulation Address Resolution Protocol |
| LEC | LAN Emulation Client |
| LECS | LAN Emulation Configuration Server |
| LED | Light Emitting Diode |
| LES | LAN Emulation Server |
| MAC | Media Access Control |
| MTU | Maximum Transmission Unit |
| PDU | Protocol Data Unit |
| PVC | Permanent Virtual Circuit |

| | |
|--------------|---|
| QOS | Quality of Service |
| SDU | Service Data Unit |
| SSIM | SmartStack Interface Module |
| SSCOP | Service Specific Connection Oriented Protocol |
| STE | Spanning Tree Explorer |
| SVC | Switched Virtual Circuit |
| UNI | User Network Interface |
| VAP | Virtual ATM Port |
| VCC | Virtual Channel Connection |
| VCI | Virtual Channel Identifier |
| VPI | Virtual Path Identifier |



Appendix B. Log Messages

Error messages that can appear on the console screen are listed below. Following each message is a short explanation of the message and, where appropriate, steps that can be taken to resolve the error condition.

0001 Lan Emulation Server join timeout - Retrying!

The LAN Emulation Server did not answer of our JOIN request. This message is only a warning. The LAN Emulation Client will retry the JOIN request. If all JOIN request retries fails then the LAN Emulation Client will report the error 0002.

0002 Lan Emulation Server join timeout - Retry exhausted!

The LAN Emulation Server did not answer any of our JOIN requests.

Action: Check the LAN Emulation Server configuration.

0003 Lan Emulation Server reports frame size mismatch!

The maximum frame size reported by the LAN Emulation Server in a JOIN response does not match the maximum frame size used by the LAN Emulation Client.

Action: Correct configuration of MaxDataFrameSize.

0004 Lan Emulation Server join failed Code : <xxx>(hex)

The LAN Emulation Server responded our JOIN request with an error code. The following error codes (decimal) are defined:

1. Invalid Version.
2. Invalid Parameters.
4. Duplicate LAN Address.
5. Duplicate ATM Address.
6. No Resources.
7. Access Denied.
8. Invalid LEC ID.
9. Invalid LAN Destination.
10. Invalid ATM Address.
20. No Configuration.
21. LeCsError.
22. Insufficient Information.

Action: Depending on the error code.

0005 Lan Emulation Server joined successfully!

Information message: The LAN Emulation Client has joined the LES successfully.

0006 Lan Emulation Server connection failed.

The connection between the LAN Emulation Client and the LAN Emulation Server was lost.

Action: Check that the LES is running and that the cable to switch is connected.

0007 Lan Emulation Server BUS ARP failed. <xxx>

The LAN Emulation Client got a bad response from the Broadcast and Unknown Server (BUS).

Action: Check the setup of the BUS.

0008 Lan Emulation Config Server connection setup failed Code <xxx>.

Failed to connect to the LAN Emulation Configuration Server. See also the error codes for 004.

Action: Check the LAN Emulation Configuration Server configuration.

0009 Lan Emulation Config Server timeout - Retry exhausted.

The LAN Emulation Configuration Server did not answer any of our CONFIG requests.

Action: Check the LAN Emulation Configuration Server configuration.

000A Lan Emulation Config Server timeout - Retrying.

The LAN Emulation Configuration Server did not answer our CONFIG request. This message is only a warning. The LAN Emulation Client will retry the CONFIG request. If all CONFIG request retrys fails then the LAN Emulation Client will report the error 0009.

000B Lan Emulation Config Server failed Code : <xxx>

The LAN Emulation Configuration Server responded our CONFIG request with an error code. See description of message 0004 for an description of the error codes.

Action: Depending on the error code.

000C Lan Emulation Config Server reports frame size mismatch!

The maximum frame size reported by the LAN Emulation Configuration Server in a CONFIG response does not match the maximum frame size used by the LAN Emulation Client.

Action: Correct the configuration file.

000D Lan Emulation Server Mf VCC timeout!

The LAN Emulation Broadcast and Unknown Server (BUS) has not opened a connection to the LAN Emulation client within the number of seconds specified by the JoinTimeout value in the configuration file (the JoinTimeout default value is 5 seconds).

Action: Check the configuration of the BUS and/or Increase the JoinTimeout value in the configuration file.

000F Lan Emulation Config Value out of range, TLV-type: <xx>, Value: <xxxx>

A TLV (Type Length Value) encoded parameter from the LAN Emulation Configuration Server (LECS) was either not supported or not within the range supported by the LAN Emulation client. TLV encoded configuration parameters can be send from the LECS to the LAN Emulation client to configure various LAN Emulation client parameters.

The TLV-types supported by the LAN Emulation client are:

1. JoinTimeout
2. MaxUnknownFrameCount
3. MaxUnknownFrameTime
4. VccTimeoutPeriod
5. MaxArpRetryCount
6. AgingTime
7. ForwardDelayTime
8. ArpResponseTime
9. FlushTimeout
- C. MsVccType
- D. MsVccAvgRate
- E. MsVccPeakRate

Action: Correct configuration of LECS.

0010 LECS Address: <xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx-xxxxxxxxxxxx-xx>

This informational message shows the ATM address of the LECS for which the LAN Emulation client successfully has established a connection (when LECS is used).

0011 Lan Emulation Config Failed opening PVC to LECS, cc: <xx>

The LAN Emulation client failed to opening the PVC to LECS.

Action: Check the configuration.

001B LES Address: <xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx-xxxxxxxxxxxx-xx>

This informational message shows the ATM address of the LES for which the LAN Emulation client successfully has established a connection.

0201 Outg. call failed: <Called ATM address> <Failure code>

An outgoing call setup has failed, with a completion code, and possibly also a cause code. The following completion codes may be returned:

- 0F Timeout
- 43 Out of local signaling resources.
- 45 Call setup aborted by local user.

- 46 Call setup cleared by network or remote user.
- 47 Link is not active (being started).
- 49 Call failed because protocol is being reset (by user).
- 4A Link failure (during call setup).
- 4B Remote user signaling state mismatch.
- 4C Received message from remote user with protocol error.
- 4D Temporary out of local signaling resources.
- 4E Remote user does not understand the call setup parameters.

The cause code is only valid if a cause Information Element (IE) has been received from the network. If no IE cause was received, a zero cause code is shown. The cause code is defined by the relevant UNI implementation agreement (see the table below).

Action: Depending on the error and cause codes.

UNI Cause Codes

- 1 Unallocated (unassigned) number
- 2 No route to specified transit network
- 3 No route to destination
- 4 VccTimeOut
- 10 VPCI/VCI unacceptable
- 13 MultiCastSend VccType
- 16 Normal call clearing
- 17 User busy
- 18 No user responding
- 21 Call rejected
- 22 Number changed
- 23 User rejects all calls with calling line identification restriction (CLIR)
- 27 Destination out of order
- 28 Invalid number format
- 30 Response to STATUS ENQUIRY
- 31 Normal, unspecified
- 35 Requested VPCI/VCI not available
- 36 VPCI/VCI assignment failure
- 37 User cell rate not available
- 38 Network out of order
- 41 Temporary failure
- 43 Access information discarded
- 45 No VPCI/VCI available
- 47 Resource unavailable, unspecified
- 49 Quality of Service unavailable
- 51 User cell rate not available
- 57 Bearer capability not authorized
- 58 Bearer capability not presently available
- 63 Service or option not available, unspecified

- 65 Bearer capability not implemented
- 73 Unsupported combination of traffic parameters
- 78 AAL parameters cannot be supported
- 81 Invalid call reference value
- 82 Identified channel does not exist
- 88 Incompatible destination
- 89 Invalid endpoint reference
- 91 Invalid transit network selection
- 92 Too many pending add parties requests
- 93 AAL parameters cannot be supported
- 96 Mandatory information element is missing
- 97 Message type non-existent or not implemented
- 99 Information element non-existent or not implemented
- 100 Invalid information element contents
- 101 Message not compatible with call state
- 102 Recovery on timer expiry
- 104 Incorrect message length
- 111 Protocol error, unspecified

0202 Virtual connection Bind failed Code : <xxx>

The requested virtual connection on the ATM Uplink could not be established. The following error codes are defined:

1. The VCI -VPI number is outside the range of the Uplink.
Change switch configuration.
4. All supported connections are in use.
Change configuration in the configuration file.

0203 Virtual connection Parameters Unsupported Code: <xxx>

The parameters received from the network for an incoming connection cannot be set in the Uplink.

Action: Contact technical support.

0204 Outg. call rejected by remote party: <Called ATM address><Location Code>:<Cause Code>

An outgoing call has been rejected by the called device. Location Code is always 0 (remote party).

The cause code indicates why the call was rejected, see table for '0201'

0205 Outg. call rejected by remote party: <Called ATM address><Location Code>:<Cause Code>

As for '0204', but the '0205' message only occurs for cause 21 and 31, which can occur during normal network operation.

**0206 Outg. call rejected by network: <Called ATM address>
<Location Code>:<Cause Code>**

As for '0204', but where the call is rejected by the 'ATM network', as coded by the 'location' field:

The location code is normally 1, but may also be one of the following:

- 1 Local Private Network
- 2 Local Public Network
- 3 Transit Network
- 4 Remote Public Network
- 5 Remote Private Network
- 7 International Network
- 10 Beyond International Network

0301 The signalling control link is active

The signalling control link (via the SSCOP protocol) is now active, and the Signalling protocol is now able to communicate through the switch. If this annuls a previous loss of the signalling control link (that is, inactive link), the signaling protocol will at this time check the state of all its active SVCs with its peer in the ATM switch - if the state of a SVC in both peers are not compatible, the SVC will be released by the Signalling protocol.

0302 The signalling control link is INACTIVE

The signalling control link (via the SSCOP protocol) is now no longer active, and the Signalling protocol is now no longer able to communicate through the switch. This means that currently no more SVCs can be established. Further, the signalling protocol will release all SVCs currently under establishment.

Note that all SVCs that are already fully established will not be released because of the inactive link - only if the link is not re-established within a timeout, will the active SVCs be released by the Signalling protocol.

However, any "Data Direct" SVCs may be cleared by the LAN Emulation protocol due to inactivity, assuming that data traffic also have ceased.

The inactive signalling control link may be caused by the ATM switch restarting (or failing), the ATM switch being overloaded, or by a poor physical (cable) connection.

Action: Check the ATM switch - if it has failed, then restart it - if it is overloaded, then take steps to reduce its load. Check the physical (cable) connection and fix any problems.

0401 SSCOP: Receipt of unsolicited or inappropriate <PDU-PDU Type>

A PDU of type <PDU Type> has been received, which is not expected in the current protocol context. The <PDU Type> may be one of the following:

SD PDU
BGN PDU

BGAK PDU
 BGREJ PDU
 END PDU
 ENDAK PDU
 POLL PDU
 STAT PDU
 USTAT PDU
 RS PDU
 RSAK PDU

ER PDU (not if UNI 3.0)

ERAK PDU (not if UNI 3.0)

Action: Check configuration. Does the configured UniVersion match the one supported by the ATM switch? If not, fix it. Alternatively, this may be caused by a poor physical link - check it.

0402 SSCOP: VT(CC) = MaxCC - Unsuccessful command retransmission

Maximum number of retransmissions of a control command PDU have been performed, without success. The control command PDU is one of the following:

BGN

END

RS

ER (not if UNI 3.0)

Action: This may be caused by a detached/moved physical link (cable), or a poor quality physical link - check it. It may be caused by the switch being inoperational (maybe due to it restarting) - check it. Alternatively, it may (in case of the ER PDU) be caused by a UniVersion configuration mismatch with the ATM switch's supported UNI version - check it.

0403 SSCOP: Timer_NO_RESPONSE expiry - No response to POLLS

During the time period defined by Timer_NO_RESPONSE, we have not received any response to any of the POLL PDUs we have sent. **Action:** This may be caused by a detached/moved physical link (cable), or a poor quality physical link - check it. It may be caused by the switch being inoperational (maybe due to it restarting) - check it.

0404 SSCOP: SD PDUs lost - N(S) error in SD or POLL PDU

A SD or POLL PDU has been received containing an unexpected value in the N(S) field. This means that SD PDUs must have been lost. Link recovery is being performed and Signalling protocol is notified.

Action: The physical link may be poor - check it.

0405 SSCOP: STAT PDU - N(PS) error

A STAT PDU has been received, containing an unexpected value in the N(PS) field. Link recovery is being performed and Signalling protocol is notified.

Action: The physical link may be poor - check it.

0406 SSCOP: STAT PDU - N(R) or list elements error

A STAT PDU has been received, either containing an unexpected value in the N(R) field, or containing an error in list elements. Link recovery is being performed and Signalling protocol is notified.

Action: The physical link may be poor - check it.

0407 SSCOP: USTAT PDU - N(R) or list elements error

A USTAT PDU has been received, either containing an unexpected value in the N(R) field, or containing an error in list elements. Link recovery is being performed and Signalling protocol is notified.

Action: The physical link may be poor - check it.

0408 SSCOP: PDU length violation

A PDU with a length outside the permitted length range for that PDU type has been received. The PDU has been discarded and is otherwise ignored.

Action: Check configuration: does the configured UniVersion match the one supported by the ATM switch? If not, fix it. Alternatively, this may be caused by a poor physical link - check it.

0409 SSCOP: count SD PDUs being retransmitted

The indicated number of SD PDUs are being retransmitted, because so requested in a STAT or USTAT PDU sent by the ATM switch.

Action: If excessive retransmissions, then the physical link may be poor - check it.

040A SSCOP: Credit condition - Lack of credit

SSCOP is currently blocked from transmitting any more SD PDUs, due to lack of “credit”, i.e. we reached the top of the transmit window.

Action: Normally none, the situation should resolve itself by obtaining credit again from the peer. If the situation does not resolve itself, check the ATM switch - is it operating correctly on this port? If the situation occurs repeatedly, this may be caused by an overloaded ATM switch.

040B SSCOP: Credit condition - Credit obtained

This annuls a previous “Lack of credit” event. SSCOP now has obtained “credit” and is again allowed to transmit SD PDUs.

Action: None, situation is normal again.

0503 Cable-problem with connection to switch.

This message indicates a problem with the cable between this ATM Uplink and the switch.

Action: Check cable.

0504 CRC checksum failure on adapter Eeprom.

This message indicates a hardware error with the ATM Uplink.

Action: Replace ATM Uplink card.

0505 SAR memory self-test failed during open.

This message indicates a hardware error with the ATM Uplink.

Action: Replace ATM Uplink card.

0601 Registered Prefix did not match configuration.

A Prefix registered by switch could not be matched to the ATM address of any configured Elan. This does not necessarily indicate a problem.

Action: Check Elan configuration against switch configuration.

0602 Configured Prefix remained unregistered after time-out.

The ATM address of one or more configured Elan's was not registered before the ATM Uplink open timed out. Open of (one of) the affected Elan(s) will fail with Completion Code: CC_LME_ADDR_NOT_REG (0x6D).

Action: Check Elan configuration against switch configuration.

0603 Configured Prefix overridden by registered Prefix, Elan No: <xx>

For the present driver version the first registered Prefix is used for all configured Elan's, independently of what Elan ATM address may have been configured. This is a warning only.

Action: Check that any reference to the address of this LEC or LES in the configuration files of other stations contains the prefix actually used.

0604 Registration/de-registration of address (SNMP SET) failed, cc: <xx>.

The address table in the switch could not be updated.

Action: Check for configuration problems such as duplicate ATM address. Check cabling to switch and that switch is still operative.

0605 Attempt to register the same Elan twice, Elan No: <xx>.

The Operating system has tried to register twice with the same Elan number.

Action: Change the Elan number for one of the Elans, or remove one of the Elans from the Operating system network configuration.

0703 ILMI: Parsing of SNMP PDU failed, cc = <xx>.

Parsing of a received PDU failed with one of the following cause codes:

2. PDU not SNMP version 1.
4. Illegal or unsupported ASN1 encoding.
5. Out of Workspace memory.

Action: Check compatibility of clients and LAN Emulation services participating in emulated LAN.

0707 ILMI: Prefix Registration time-out, Cold Start retried.
Time-out of Prefix registration from switch. Address registration procedure is restarted by re-sending Cold Start trap.

Action: Informative message, see also code 602.

0708 ILMI: Get Response time-out, Get Request retried.
Time-out of switch response to Get Next request. The Get Next request is re-sent.

Action: Informative message, see also code 602.

0709 ILMI: Cold Start Trap received from switch.

Information: The switch has reinitialized the port.

Action: Informative message, the end stations should automatically recover lost connections.

070A ILMI: MIB access failed: text.

Switch access to the local ILMI MIB failed for one of the following reasons:

Too Big: Response larger than supported PDU size (448).

BadValue: Set operation with illegal value.

ReadOnly: Set operation to read-only variable.

GenErr:

Action: Check compatibility of clients and LAN Emulation services participating in emulated LAN.

0803 PVC Response only on CDIR-VCC or CD-VCC.

The LAN Emulation Server and the LAN Emulation Client configuration of the ControlDirect or the ControlDistribute PVC does not match.

Action: Correct the configuration of the ControlDirect or the ControlDistribute PVC.

0804 PVC Request with multicast only on MD-VCC or MS-VCC.

The LAN Emulation Server and the LAN Emulation Client configuration of the MulticastSend or MulticastForward PVC does not match.

Action: Correct the configuration of the MulticastSend or MulticastForward PVC.

0805 PVC Request with multicast only sent on MS-VCC.

The LAN Emulation Server and the LAN Emulation Client configuration of the MulticastSend PVC does not match.

Action: Correct the configuration of the MulticastSend PVC.

0806 A System PVC has been defined twice.

A system PVC (ControlDirect, ControlDistribute, MulticastSend or MulticastForward) has been defined twice.

Action: Remove or correct PVC definition.

0807 PVC User Index too large.

The UserIndex parameter of a PVC definition for the Lan Emulation Server identifies a specific client and must have a value from 1 to MaxClients (default 50).

Action: Adjust MaxClients or correct PVC configuration.

0808 PVC ATM address is wrong <xx> <xx> ... <xx>

A bad PVC ATM address have been specifie. The error could be:

1. The PVC ATM address have not been specified.
2. A NULL PVC ATM address have been specified.
3. The specified ATM address does not match the ATM address specified in the destination.

Action: Correct PVC address.

080E PVC CdirVcc or MsVcc not configured.

Either the ControlDirect or the MulticastSend PVC has not been defined.

Action: Add or correct PVC definition.

0821 Traffic Profile map refers to non-existing traffic profile in ELAN, Map: <xx> <yy>

The traffic profile <yy> referenced in a traffic profile map <yy> for VAP <xx> does not exist.

Action: Change the traffic profile map <yy> to use an existing traffic profile or define the used traffic profile.

0822 Default Traffic Profile refers to non-existing traffic profile in ELAN <xx>

The default traffic profile defined for VAP <xx> does not exist.

Action: Change the default traffic profile to an existing traffic profile or define the used traffic profile.

0823 PVC traffic Profile refers to non-existing traffic profile <xx>

The traffic profile <xx> defined for a PVC does not match a defined traffic profile.

Action: Change the PVC definition to select an existing traffic profile or define the used traffic profile.

0825 PVC VPI value too large. VPI=<xx>, VCI=<yy>, Max VPI=<zz>

The VPI value for the PVC <xx>:<yy> is too large, the maximum VPI value is <zz>.

Action: Change the VPI value to a smaller value or enable usage of larger VPI values by increasing the MaxVpiBits value.

0826 PVC VCI value too large. VPI=<xx>, VCI=<yy>, Max VPI=<zz>

The VCI value for the PVC <xx>:<yy> is too large, the maximum VCI value is <zz>.

Action: Change the VCI value to a smaller value or enable usage of larger VCI values by increasing the MaxVciBits value.



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